

• COLORADO RIVER •  
**AQUEDUCT NEWS**

THE METROPOLITAN WATER DISTRICT



OF SOUTHERN CALIFORNIA

Vol. III.

MARCH, 8, 1936

No. 5



**LAKEVIEW SIPHON**

Looking east from above the east portal of Bernasconi tunnel, on Griffith Company work in the Lakeview valley.



# **AQUEDUCT NEWS**

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

LOS ANGELES, CALIFORNIA

*Published twice monthly in the interest of Field and Office Workers on the Colorado River Aqueduct, and for the information of all other citizens of the Metropolitan Water District.*

Vol. III March 8, 1936 No. 5

## **A MONUMENTAL WORK**

On February 29 an event of great historical importance took place at Boulder City, Nevada.

The United States Bureau of Reclamation formally accepted from Six Companies, Inc., the greatest dam which ever has been produced by Man's engineering and construction skill.

The short, informal ceremony which marked the transference of Boulder Dam to the Federal Government constituted an important milestone in the development of Southwestern United States.

The simple act of passing a key from one hand to another was symbolic of the realization of great dreams and the fruition of weary years of work by far-seeing men who realized, long before the world realized, the necessity of stemming the flow of the Colorado River—and putting that wild force to work for the benefit of mankind.

The huge block of concrete that is Boulder Dam stands as a monument not only to the skill of the men who created it but also to the men who had the vision and the courage to make it possible for the job to be done. The lawyer, the journalist, the statesman, and the economist each combined his labors with those of the engineer and the construction man to bring about the realization of this dream.

Today the dam itself stands completed. Behind it, extending 90 miles upstream, lies what is already the largest artificial like in the world—though it is less than 15 per cent full.

It is that blue lake which is making possible the even larger Metropolitan Water District Aqueduct. From it will come the water that is to be carried in tunnels, siphons, canals, and conduits across the State of California to thirteen cities clustered at the edge of the Pacific. Water that will constitute a semi-desert civilization's answer to Nature.

# **AQUEDUCT MEN CONTRIBUTE TO ENGINEERING MAGAZINE**

Taking on what amounts to almost the aspects of a Metropolitan Water District number, the February issue of CIVIL ENGINEERING pays the District and the Colorado River Aqueduct the compliment of devoting an unusual amount of space to them.

The magazine, which is the official organ of the American Society of Civil Engineers, carries three special articles giving details of the big job.

One is written by Carl H. Heilbron, Jr., and William H. Saylor, of the District's design division, another was by Safety Engineer T. W. Osgood, and the third is from the pen of D. A. Elliott.

The article by Mr. Saylor and Mr. Heilbron is titled "An Invar-Tape Extensometer," and deals with the device by that name developed by the District to carry forward strain, temperature, and earth pressure tests on aqueduct conduit sections. The new instrument, giving

an accuracy of one in 100,000, supanted fixed reference bars which were too cumbersome for practical use under aqueduct conditions.

Mr. Osgood's article is titled "Safety on the Colorado River Aqueduct" and describes the safety measures which have resulted in low accident frequencies.

It is pointed out that while the number of men employed steadily increased in 1935, the number of accidents per million man-hours worked that year was 42 per cent below the 1934 record and 11 per cent below the state average.

"The Water Exhibit at the San Diego Exposition" is the title of Mr. Elliott's contribution to the magazine. It describes details of the building and the animated maps and models of the Water Palace sponsored at the fair by the Metropolitan Water District, the Water Department of the City of Los Angeles, and the Imperial Irrigation District.

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Divisions 5 & 6.....J. B. Bond  
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### **SUPERINTENDENTS (Main Aqueduct Tunnels)**

Colorado River, Copper Basin and Whipple Mt. Tunnels, Walsh Construction Co., W. A. Huntington and L. M. Ramey, Tunnel Supts.

### **nel Supts.**

Coxcomb Tunnel and Iron Mt. shaft, Winston Bros., E. A. Bernard, Gen Supt.; F. T. Hillman and R. V. Johnson, Tunnel Supts.  
Iron Mt. Tunnel, West Portal, Utah Construction Co., Ben Arp, Gen. Supt.  
East Eagle Mt. Tunnel and West Eagle Mt. Tunnel, east portion, Broderick & Gordon, C. J. Kavanagh, Gen. Supt.  
West Eagle Mt. Tunnel, west portion, L. E. Dixon and Bent Bros., P. C. Guinn, Gen. Supt.  
Cottonwood Tunnel, J. F. Shea Co., Inc., Gilbert Shea, Gen. Mgr., Wallace Young, Master Mechanic.  
Coachella Division, B. C. Leadbetter, Gen. Supt.  
Fargo Adit, E. Coachella Tunnel, Dist. Force Acct., Neil O'Donnell.  
Pushawalla Adit, and Berdoo Aggregate plant, East Coachella Tunnel, Dist. Force Acct., John Austin.  
Thousand Palms, Dist. Force Acct., Lyle McMillen, Gen. Foreman.  
Wide Canyon, Dist. Force Acct., Kenneth MacIssac.  
Long Canyon, Dist. Force Acct., C. E. Sides.  
San Jacinto Tunnel, District Force Acct., C. R. Rankin, Gen. Supt., E. E. McCabe, W. L. Taylor and Frank Laird, Tunnel Supts.  
Valverde Tunnel, Dravo Contr. Co., R. W. Remp, Gen. Supt.; H. C. Richardson, Asst. Gen. Supt.; Fred Youmans, Tunnel Supt.; John Will, Concrete Supt.

### **(Distribution Tunnels)**

Monrovia tunnels, West Construction Co., H. E. Carleton, Gen. Supt., O. V. Humason, Peter Brisbois and Angus MacDonnell, Tunnel Supts.  
Sierra Madre tunnel, J. F. Shea Co., Inc., Edmund H. Shea, Supt.  
Pasadena tunnel, San Rafael tunnels Nos. 1 and 2, and Monrovia tunnel No. 4, L. E. Dixon

Co., Bent Bros., Inc., and Johnson, Inc., H. J. King, Gen. Supt.; D. L. Simpson, L. E. Bury and P. C. Guinn, Supts.

### **(Canal, Siphon, Conduit)**

Schedules Nos. 1, 1A, 1B, 10, 10A, 10B, 11, 11A, 11B, 11C, 13, 13A, and 13B, Aqueduct Construction Co., C. M. Elliott, Gen. Supt.; Charles Harlowe, Jr., Excav. Supt., and Charles Clapp, Supt.

Schedules Nos. 2, 2A, 2B, 3, 3A, 3B, 7 and 7A, Barrett & Hip and Macco Corp.; H. W. McKinley, Supt.

Schedules Nos. 4, 4A, 5 and 5A, Jahn & Bressi Construction Co., Joseph Muscolo, Gen. Supt.; Dominick Bressi, Asst. Gen. Supt.

Schedules Nos. 6, 8, 8A and 8B, Clyde W. Wood and M. J. Bevan, A. F. Weesner, Gen. Supt.; L. L. Green, Excav. Supt.; A. V. Fisher and V. S. Price, Concrete Supts.

Schedules Nos. 9, 9A, 9B and 9C, The Utah Construction Co., Ben Arp, Gen. Supt.; E. C. Caldwell, Excav. Supt.

Schedules Nos. 12 and 12A, Three Companies, Inc., C. J. Kavanagh, Supt.

Schedules Nos. 14, 15 and 16, Thompson-Starrett Co., Inc., Arthur Langevin, Gen. Supt.; Rodney Smith, Resident Engineer; William Hayes, Excav. Supt.

Schedule 17, Dist. Force Acct., H. Hjalmarson, Supt. (Fan Hill) and P. J. Lynch, Supt. (Wide Siphon).

Schedule 18J, Morrison-Knudsen, J. O. Young, Gen. Supt.  
Schedules Nos. 18, 19 and 20, J. F. Shea Co., Inc., H. F. Rennebohm, Supt.

Schedules Nos. 20A, 20B, 20C, 21, 22 and 23, The Griffith Co., Harry Davis, Supt.

### **(Dams)**

Cajalco dam, The Griffith Co., Rex B. Sawyer, Gen. Supt.  
Parker dam, Six Cos., Inc., Perry Yates, Gen. Supt.; E. A. Moritz, Eng. in charge.





Another Aqueduct tunnel reaches daylight! The picture at left above was taken a few seconds after Dixon-Bent-Johnson crews holed out the east portal of the Pasadena tunnel. Reading left to right—Assistant to the General Manager Don J. Kinsey, Director Arthur Taylor, Director W. H. Carter, Director J. L. Norwood, Director D. W. Pontius, Director William H. Cook, Mayor Frank L. Shaw of Los Angeles, Director Franklin Thomas, Director Perry H. Greer, and Director Walter Humphreys. Kneeling—Director Bernard Brennan. The picture at right was made at the holing through between



the west portal and Potrero shaft on San Jacinto tunnel. Among those present were: L. L. Gilbert, David Shell, J. H. Thomas, A. Adman, Ray Skaggs, Roy Scriven, Roy Block, Tom Silva, Jack White, Frank Swanson, William Warfield, Henry Wade, W. E. Patterson, L. Hinkle, Edwin Jensen, W. E. Smith, R. H. Peyton, J. B. Bond, Al Huhn, B. J. Scott, Jack Schrode, Hal Aiken, Charles Wilson, Floyd Leinabach, L. Hunt, Sidney Moore, Melvyn Spangler, John Jefferson, Fred Crawford, C. C. Carpenter, John Olsen, Richard Stephens, Ralph Fell, and William Coons.

## CIVIC LEADERS PRESENT AT PASADENA HOLING THROUGH

Climaxing 12 months of steady labor, Dixon, Bent & Johnson crews broke through to daylight on the three and one-third mile Pasadena tunnel of the aqueduct distribution system on February 25 in the presence of a large gathering of Southern California civic leaders and Metropolitan Water District officials.

The tunnel's driving was completed shortly after 11 o'clock. Witnesses saw the event from a surface excavation which had been cut into Mountain street near its intersection with Martello street in Pasadena.

With a crowd estimated at 1,000 persons waiting outside the tunnel, Mayor Frank L. Shaw of Los Angeles, accompanied by a group of District directors, witnessed operations at the heading, having entered the tunnel from its west portal. When the last barrier of earth had been cleared away, those inside the bore stepped across to greet the crowd outside.

Vice-Chairman Franklin Thomas, representative of the City of Pasadena on the District board, was in charge of an informal ceremony outside. Among those who spoke briefly or were introduced to the crowd were Director Perry Greer, Assistant Chief Engineer Julian Hinds, Chairman E. O. Nay, of the Pasadena board of city directors; Stanley Bent, L. E. Dixon, Hiram O. Wadsworth, a

pioneer advocate of Colorado River development; Superintendent H. J. King, Distribution Engineer R. B. Diemer, and Resident Engineer George Baker.

The completion of excavation on the Pasadena tunnel followed close upon two similar events at widely separated points along the aqueduct system—the holing out at the west portal of Coxcomb tunnel and the holing through between west portal and Potrero shaft on San Jacinto.



That Pasadena and San Jacinto didn't monopolize the limelight when it came to holings through and out recently is evidenced by the above picture. It shows Winston Brothers' crews cleaning up the west portal of Coxcomb tunnel, just after excavation on the three and one-third mile bore was completed.

## Safety On the Aqueduct

Fire prevention was the chief subject under discussion at last month's meeting of the Colorado River Aqueduct Contractors Executive Safety Committee, held at the Desert Inn, Palm Springs, and attended by 30 contractors' executives and District construction men and engineers.

Chairman C. J. Kavanagh introduced five "first-nighters" as follows:

R. B. Ward, resident engineer, M. W. D., Cajalco dam; William H. Schutte, Western Pipe & Steel Company; J. S. Connell, American Concrete & Steel Pipe Company; V. H. Wiese, Thompson-Starrett Company, and D. G. Gordon, Broderick & Gordon.

Safety Engineer T. W. Osgood introduced the speaker of the evening, John T. Howell, fire protection engineer for the Union Oil Company of California. Mr. Howell advocated the "offensive attitude" in meeting the fire problem; that is, the elimination so far as possible of causes of fires rather than complete reliance upon fire fighting equipment.

He stressed the fact that successful fire prevention can be accomplished only by a definite alignment of responsibility starting from the management and progressing down through the superintendents and foremen to the workmen.



# CONSTRUCTION

## TUNNELS

TUNNEL EXCAVATION (MILES)  
Completed Remaining

Aqueduct	84.33	752
Distribution	9.82	6.41
Total	94.15	13.93

February 1 to 29, 1936

\* TUNNEL LINING (MILES)  
Completed Remaining

Aqueduct	31.14	60.72
Distribution	.0	16.23
Total	31.14	76.95

\* Arch considered to equal 0.9 of completed section.

### TUNNEL PROGRESS

CONTRACTOR	TUNNEL	LENGTH IN FEET	EXCAVATION IN FEET					LINING IN FEET					
			NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAIN- ING	ARCH OR INVERT	NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAIN- ING
AQUEDUCT—CONTRACT													
WALSH CONSTRUCTION CO.	COLORADO RIVER	5,482		Completed		5,482	0	Arch Invert			0	5,475	7
	COPPER BASIN NO. 1	705		Completed		705	0	Arch Invert			0	5,475	7
	COPPER BASIN NO. 2	11,568		Completed		11,568	0	Arch Invert	39	273.9	0	696	9
	WHIPPLE MOUNTAIN East from Adit West from Adit	(32,238) 18,336 13,902		Completed Completed		(32,238) 18,336 13,902	(0) 0 0				11,568 11,568 0	696 696 0	9 9 0
WINSTON BROTHERS	IRON MT. (E. PORTION) East from Shaft West from Shaft	(23,645) 9,902 13,743		Completed Completed		(23,645) 9,902 13,743	(0) 0 0	Arch	75	35.9	2,693	3,395	20,250
UTAH CONSTRUCTION CO.	IRON MT. (W. PORTION)	16,172		Completed		16,172	0	Arch			0	20	16,152
WINSTON BROTHERS	COXCOMB (From E. Portal)	17,795	51	7.5	382	17,795	0					0	17,795
BRODERICK & GORDON	E. EAGLE (From W. Portal)	9,442	48	8.8	424	9,099	(343)					0	9,442
	W. EAGLE (E. PORTION) East from Adit West from Adit	(15,845) 7,871 7,974				(15,845) 7,871 7,974	(0) 0 0					0	(15,845)
	W. EAGLE (W. PORTION)	10,649		Completed		10,649	0	Arch Invert			0 0	10,649 10,649	0 0
DRAVO CONTRACTING CO.	VALVERDE East Portal to Shaft 3 West from Shaft 3 East from Adit West from Adit	(38,015) 21,415 12,067 4,533		Completed Completed Completed		(37,765) 21,415 8,964 3,103 9,283	(250) 0 0 250	Arch Invert	54 63	46.6 16.0	2,518 9,062	24,708 19,719	13,307 18,296
	TOTALS	Ft. 181,556 (34.39)	180	6.2	9.84 (0.19)	180,963 (34.27)	593 (0.12)	Arch Invert	129 102	41.3 144.9	5,211 20,630	56,511 48,107	125,045 133,449

### AQUEDUCT — FORCE ACCOUNT

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	EAST COACHELLA	(96,605)		Completed		(96,605)	0	{ Arch Invert Arch Invert	25	53.0	1,325	14,190	28,720
	East Portion	42,910		Completed		42,910	0		38	263.7	10,022	10,022	32,888
	West Portion	53,695		Completed		53,695	0		66	50.6	3,342	10,753	42,042
	1000 PALMS NO. 1 (From W.P.)	16,058		Completed		16,058	0	{ Arch Invert Arch Arch			0	3,838	0
	1000 PALMS NO. 2	3,838		Completed		3,838	0				0	3,838	0
	WIDE CANYON NO. 1	14,305		Completed		14,305	0				0	14,305	0
	WIDE CANYON NO. 2	848		Completed		848	0	{ Arch Arch Arch			0	848	0
	SEVEN PALMS (From E. Prtl)	4,810		Completed		4,810	0					0	0
	SEVEN PALMS (From W. Prtl)	11,920		Completed		11,920	0		72	54.8	3,942	11,226	5,504
	LONG CANYON (From E. Prtl)	15,295	72	9.6	694	19,957	338	{ Arch Arch Arch				0	15,295
	BLIND CANYON	6,848				5,580	1,268					0	6,848
	MORONGO NO. 1	5,712				5,364	348					0	5,712
	MORONGO NO. 2	1,820				0	1,820	{ Arch Arch Arch				0	1,820
	SAN JACINTO	(67,663)				(32,308)	(35,355)					0	(67,663)
	Cabazon Shaft to East Portal	8,653	87	6.8	594	6,166	2,487						
	West from Cabazon Shaft		87	3.7	326	8,778	32,733	{ Arch Arch Arch Arch Arch					
	East from Potrero Shaft	43,511	87	0.4	33	2,000							
	West from Potrero Shaft		66	5.8	384	5,118							
	From West Portal	15,499	66	6.6	433	10,246	135						
	TOTALS	Ft. 245,722 Miles (46.54)	46.5	5.3	2,464 (0.47)	206,593 (39.13)	39,129 (7.41)	Arch Invert	163 38	52.8 263.7	8,609 10,022	55,160 13,860	190,562 231,862

### DISTRIBUTION — CONTRACT

GRIFFITH CO.	CAJALCO OUTLET	2,565		0	0	2,565						0	2,565
WEST CONSTRUCTION CO.	MONROVIA NO. 1 (From W.P.)	7,875	83	5.3	440	7,765	110					0	7,865
	MONROVIA NO. 2 (From Jct.1)	940			0	298	642					0	940
	MONROVIA NO. 3	(32,105)				(14,613)	(17,492)					0	(32,105)
	East from Adit	11,340	83	10.6	882	4,118	7,222						
DIXON, BENT BROS. & JOHNSON	West from Adit		83	5.3	443	2,694	10,270						
	From West Portal	20,765	83	7.4	618	7,801							
J. F. SHEA CO., Inc.	MONROVIA NO. 4 (From W.P.)	8,096	83	6.3	521	1,863	6,233					0	8,096
DIXON, BENT BROS. & JOHNSON	SIERRA MADRE (From E. Prtl)	6,700	50	30.2	1,510	6,342	358					0	6,700
	PASADENA EAST	5,546	38	21.9	833	5,546	0					0	5,545
	PASADENA (From West Portal)	12,140		Completed		12,140	0					0	12,140
	SAN RAFAEL No. 1 (From W.P.)	4,077	83	6.4	529	5,281	796					0	4,077
	SAN RAFAEL No. 2 (From E.P.)	5,661			0	0	5,661					0	5,661
TOTALS		Ft. 85,705 Miles (16.23)	586	9.9	5,776 (1.09)	51,848 (9.82)	33,857 (6.41)					0	85,705



# ION PROGRESS

CANAL, CONDUIT AND SIPHON (MILES)		
	Completed	Remaining
Excavation	97.93	46.10
Concrete	79.29	63.69
Back Fill	24.62	56.09

## CANAL, CONDUIT, SIPHON & PIPE LINES

February 15 to 29, 1936

DISTRIBUTION PIPE LINES (MILES)		
	Completed	Remaining
Excavation	0	41.58
Concrete	0	41.58
Back fill	0	41.58

### AQUEDUCT

SCHED. NO.	CONTRACTOR	FEATURES	Length In Feet	EXCAVATION—Feet			CONCRETE—Feet			BACKFILL—Feet		
				Period	To Date	Remain'g	Period	To Date	Remain'g	Period	To Date	Remain'g
1	AQUEDUCT CONSTR. C.	Conduit and Siphons	22,025	2,485	19,020	3,005	1,315	12,493	9,532	1,810	8,930	13,095
2	BARRETT & HILP	Conduit and Siphons	30,569	2,674	22,483	8,086	1,919	11,944	18,625	3,290	6,520	24,049
3	AND MACCO CORP.	Canal and Siphons	40,750	0	36,955	3,795	2,632	28,704	12,046	0	0	12,695
4	JAHN & BRESSI	Canal and Siphons	53,218	12,283	53,218	0	7,743	34,304	18,914	1,560	0	3,075
5	CONSTR. CO.	Canal and Siphons	53,588	0	53,588	0	158	53,474	114	0	2,160	1,860
6	WOOD AND BEVANDA	Siphon	15,540	1,670	12,650	2,890	1,276	6,775	8,765	1,050	4,800	10,740
7	BARRETT & HILP & MACCO CORP.	Canal and Conduit	27,707	0	27,707	0	0	27,707	0	0	12,170	180
8	WOOD AND BEVANDA	Canal and Siphons	49,579		49,579	0	32	49,034	545	0	6,683	1,207
9	UTAH CONSTRUCTION CO.	Canal, Conduit and Siphons	47,404	3,060	43,770	3,634	5,870	40,203	7,201	248	426	5,814
10	AQUEDUCT CONSTR. CO.	Canal and Siphons	44,505	75	44,505	0	590	44,055	450	900	1,380	3,470
11		Canal, Conduit and Siphons	44,507		0	44,507		0	44,507		0	10,462
12	THREE COMPANIES, INC.	Conduit and Siphons	33,446	168	28,338	5,108	1,680	19,931	13,515	2,050	15,800	17,646
13	AQUEDUCT CONSTR. CO.	Canal, Conduit and Siphons	33,270	3,301	8,876	24,394		0	33,270		0	4,075
14	THOMPSON-STARRETT CO.	Conduit and Siphons	32,366	2,564	24,537	7,829	2,109	19,051	13,315	640	11,180	21,186
15		Conduit and Siphons	35,849	0	0	35,849		0	35,849		0	35,849
16		Conduit and Siphons	19,359	0	0	19,359		0	19,359		0	19,359
17	M. W. D.—FORCE ACCT.	Conduit and Siphons	22,119	774	8,881	13,238	1,338	4,794	17,325	361	1,210	20,906
18	J. F. SHEA CO., INC.	Conduit and Siphons	27,537	1,508	4,675	22,862	611	820	26,717		0	27,564
18J	MORRISON-KNUDSEN CO.	Siphons	9,809	1,220	9,809	0	642	8,675	1,134	550	4,720	5,089
19	J. F. SHEA CO., INC.	Conduit and Siphons	37,464	0	0	37,464	0	0	37,464	0	0	37,464
20		Siphons	18,618	0	18,618	0	0	18,618	0	0	18,618	0
20 A & B		Siphons	735	0	705	30		0	735	0	0	735
21	GRIFFITH COMPANY	Siphons	14,613		14,613	0	810	13,634	979	850	12,765	1,848
22		Siphons	7,229	2,007	2,756	4,473		0	7,229		0	7,229
23	(Outlet Channel Unlined)	Conduit and Outlet Channel	38,699	1,800	31,789	6,910	968	24,458	8,691	0	21,917	11,232
TOTALS			760,505	35,589	517,072	243,433	29,693	418,674	336,281	13,309	129,984	296,129

### DISTRIBUTION PIPE LINES

1	AMER. CONC. & STL. PIPE CO.	Precast Concrete Pipe	12,227	0								
2	WESTERN PIPE & STL. CO.	Welded Steel Pipe	54,530	0								
3	AMER. CONC. & STL. PIPE CO.	Precast Concrete Pipe	20,124	0								
4			25,867	0								
5			24,895	0								
6	J. F. SHEA CO., Inc.	Precast Concrete Pipe	27,348	0								
7			30,044	0								
8	UNITED CONC. PIPE CORP.	Precast Concrete Pipe	24,525	0								
TOTALS			219,560	0								

### MISCELLANEOUS CONSTRUCTION

February 15 to 29, 1936

#### AQUEDUCT PUMPING PLANTS AND APPURTENANT WORKS

CONTRACTOR	FEATURES	EXCAVATION—Cu. Yds.				CONCRETE—Cu. Yds.				STEEL—Tons			
		Est. Quan.	Period	To Date	%	Est. Quan.	Period	To Date	%	Est. Quan.	Period	To Date	%
WINSTON BROS. CO. & WILLIAM C. CROWELL	Intake Plant	102,400	8,000	10,400	10.1								
WOOD AND BEVANDA	Gene Plant	92,600	26,950	68,000	73.5								
NOT AWARDED	Iron Mt. Plant	358,700	20,000	20,000	5.6								
NOT AWARDED	Eagle Plant												
NOT AWARDED	Hayfield Plant												
TOTALS													

#### BOULDER TRANSMISSION LINE—FRITZ ZIEBARTH

FEATURES	Length—Line Mi.	Period	To Date	Percent
Footings Constructed	237.0	9.5	15.5	6.5
Towers Erected	237.0	0	0	0
Wire Strung	237.0	0	0	0

#### TELEPHONE LINES—NEWBERY ELECTRIC CO.

FEATURES	Length—Line Mi.	Period	To Date	Percent
Converting Spur to Trunk Line	7.8	0	7.8	100
Constructing New Trunk Line	139.5	24.4	51.3	36.8

#### PARKER RESERVOIR—SIX COMPANIES, INC.

FEATURES	Est. Quan.	Period	To Date	Percent
Diversion Tunnels—Excav.	3,477 Ft.	163	2,504	71.8
Diversion Tunnels—Concrete	3,477 Ft.	0	0	0
Dam Excavation	1,391,000 C.Y.	0	0	0
Dam Concrete	277,900 C.Y.	0	0	0

#### CAJALCO RESERVOIR—GRIFFITH COMPANY

FEATURES	Est. Quan.	Period	To Date	Percent
Diversion Tunnel	2,000 Ft.	0	2,000	100
Dam & Dike Excavation	651,000 C.Y.	3,200	7,800	1.3
Dike Fill	4,113,000 C.Y.	94,000	1,210,000	29.4
Dam Fill	3,410,000 C.Y.	0	0	0

### COMPLETED FEATURES

#### TUNNELS

CONTRACTOR	TUNNEL	Length in Miles	Work Started	Work Completed
MORRISON-KNUDSEN CO.	Mecca Pass, No. 1, 2 & 3	1.13	7-17-33	2-10-35
WEST CONSTRUCTION CO.	Whitewater Nos 1 & 2	1.94	7-18-33	4-15-35
SHOFNER & GORDON	Hayfield No. 2	1.03	7-8-33	7-27-35
HAMILTON & GLEASON	Bernasconi	1.18	4-19-33	11-21-35
J. F. SHEA CO., INC.	Cottonwood	3.81	6-14-33	12-29-35
HUNKIN-CONKEY CON. CO.	Hayfield No. 1	1.84	10-21-33	1-9-36
TOTALS		10.93		

#### CANAL, CONDUIT AND SIPHON

CONTRACTOR	FEATURE AND NAME OR SCHEDULE	Length in Miles	Work Started	Work Completed
UNITED CONC. PIPE CO.	LITTLE MORONGO SIPHON	0.13	2-27-34	8-20-34
M.W.D.—FORCE ACCT.	FAN HILL COND. & SIPHON	0.32	10-21-33	11-19-34
GRIFFITH COMPANY	SCHEDULE NO. 20-C	1.33	5-3-35	9-14-35
TOTALS		1.78		



## Parker Dam Girls Have Champ Nine

Rapid construction progress is not the only thing they are crowing about these days out Parker Dam way—not while the Whipple Whippies are on the rampage.

The Whipple Whippies, in case anyone insists on dignity, are the girl's baseball team representing Parker Dam school. And they're representing it with a vengeance. Undeclared by all comers, their most difficult opponents were Blythe and Needles High Schools, each of which have twice been taken into camp by the Parker girls.

The first games with both Needles and Blythe were fairly close, but the last games were routs. Two weeks ago the Parkerettes whipped Needles to the tune of 33 to 4, and last week handed Blythe a 21 to 14 licking. They are coached by John Eckhardt of the Parker school's faculty.

In adjoining columns will be found proof that the young ladies can hold their own when it comes to pulchritude as well as runs and hits.

In the picture they appear as follows:

Front row (left to right)—Ruth Schwanbeck, 3d base; Romaine Freeman, 1st base; Joyce Whitson, left field; Dorothy Cox, center field; Mabel Sharp, catcher. Second row—Janie Parker, 3d base; Elaine Freeman, 2nd base; Clara Cox, pitcher; Armeline Cox, 1st short stop; Minnie Schockley, 2nd short stop and captain; Irene Cronin, right field. Standing—Coach John Eckhardt.

## Work On Boulder Power Line Speeded

With 71 men on the job, Fritz Ziebarth crews on the Aqueduct-Boulder Dam power transmission line are moving forward at an increasing rate of speed.

Excavation for steel tower footings by machine and by hand labor is continuing. The operation of placing concrete footings is progressing at a faster rate.

Reports from the job, showing work done up to February 29, reveal that all of the 104 pile footings have been completed and 152 out of a total of 3,644 concrete footings have been constructed.

## Who's Who On the Aqueduct

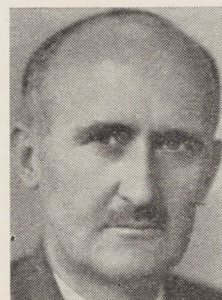
**F. E. WEYMOUTH**  
*Gen. Mgr. and Chief Engineer,  
Metropolitan Water District.*



**F. E. Weymouth**  
Graduated from the University of Maine in 1896. . . . After engineering work in Canada and Nicaragua, entered U. S. Reclamation Service in 1902, remaining until 1924. . . . During early years with U.S.R.S. worked in Montana and North Dakota. . . . In 1908 was made supervising engineer of Idaho District. . . . Among other big jobs, directed construction of Arrowrock Dam, highest in world at that time. . . . From 1916 to 1920 was chief of construction. . . . In 1920 was made chief engineer. . . . An outstanding achievement as U.S.R.S. engineer was his work, with A. P. Davis, on surveys and plans and estimates for Boulder Dam. . . . Left Reclamation Service in 1924 to become president of engineering firm of Brock & Weymouth . . . then was made chief engineer of J. G. White Engineering Corporation in Mexico. . . . In 1929 he became L. A.'s chief engineer of water works, and later in same year was made chief engineer of Metropolitan Water District.

**J. L. BURKHOLDER**  
*Asst. Gen. Mgr., Metropolitan  
Water District*

University of Kansas graduate, class of 1907. . . . Went



Julian Hinds

through engineering mill for AT&SF Ry. as rodman, chainman, masonry inspector, etc. . . . In Reclamation Service, 1910-22, on Boise and Rio Grande projects. . . . Was engineer in charge of drainage, U.S. R.S., Denver, 1919-22. . . . Asst. Administrator on Barahona project, Dominican Republic, 1922-25. . . . Resident engineer on North Wichita Drainage and Flood Control project, 1925. . . . Chief Engineer, Middle Rio Grande Conservancy District, 1926-33. . . . With M. W. D. since 1933.

### JULIAN HINDS

*Asst. Chief Engineer, Metropolitan  
Water District*

Graduated from Texas U., 1908. . . . In 1909-10 worked for GT&W Ry. and CM&StP Ry. . . . Entered Reclamation Service in 1910 and stayed until 1926. . . . Became famous as designing engineer, designing or participating in design of Tieton, Black Canyon, Elephant Butte, Horse Mesa, Willwood dams, and many others. . . . In 1926 joined J. G. White Corp. as resident engineer on Calles dam and other structures. . . . In 1929 became engineer in charge of hydraulic design for L. A. Department of Water and Power. . . . In 1930 joined Metropolitan Water District staff.

**EDITOR'S NOTE.**—This is the first of a series of brief sketches of engineering and construction personalities on the aqueduct. Others will appear in future issues.



The Whipple Whippies—otherwise known as the girls' baseball team of Parker Dam School. They've conquered all comers. (See Col. 1.)



# NEWS FROM FIELD AND OFFICE

Moving earth isn't the only thing they can do well out Cajalco dam way. At a recent American Legion dance at La Sierra Heights Bill Riker of the Griffith Company and Miss Citeraella of Arlington won the fox trot prize. Bill admits that this fellow Astaire is pretty good, too.

\* \* \*

Gus McGinnis, operator at Parker substation on the Colorado River, has his amateur radio station completed and is now a licensed radio operator, his call letters being W6NIZ. Gus has announced that he'll be glad to send messages home for any of the boys out in that neck of the woods.

\* \* \*

By the time this issue of the NEWS reaches its readers, the Sierra Madre tunnel of the aqueduct Distribution system will have been added to the roster of aqueduct bores which have been holed through. J. F. Shea Company crews were scheduled to have reached daylight by Monday, March 9. Work on the 6,700-foot tunnel was started October 2, 1935, and carried forward on a two-shifts-a-day basis, several new progress records having been established in the course of the job.

\* \* \*

Preston Schwartz of the District's soil testing laboratory at Cajalco has resigned to accept a position in the Denver office of the U. S. Reclamation Service.

\* \* \*

Manchester Boddy, publisher of the Daily News and the Evening News in Los Angeles, was an aqueduct visitor last week. Mr. Boddy viewed tunnel driving operations at Long Canyon and siphon construction at Wide. He was entertained at lunch in the Long Canyon dining hall by General Superintendent B. C. Leadbetter and Superintendent C. E. Sides. That he was impressed by what he saw is evidenced by the following account of the visit, written for his daily column "Views of the News": "The engineering staff, the directors, foremen and workmen of this vast public enterprise are establishing world records for efficiency and accuracy. The entire operation moves with the grace of a mighty engine. The construction represents the end product of science applied to man's greatest conquest over nature. . . ."

## AQUEDUCT TEMPERATURES

February 15 to 29, 1936

	Max.	Min.
Div. 1.....	80°	39°
Div. 2.....	79°	37°
Div. 3.....	79°	35°
Div. 4.....	92°	44°
Divs. 5 & 6.....	78°	31°

The blue haze of cigar smoke noticeable in certain sections of the L. A. headquarters building recently was traceable to Clarence Vendley of the Electrical division who has been passing out Havanas in honor of the arrival of Kenneth Vendley, an eight and one-half pounder who put in his appearance February 23 in Glendale. Mrs. Vendley and the young fellow both are doing fine.

\* \* \*

News dispatches on March 6 stated that Frank Crowe, superintendent for Six Companies, Inc., on the Boulder Dam project, which recently was completed and turned over to the Federal Government, will assume active charge of the Parker Dam job, on which Six Companies also holds a contract.

\* \* \*

Another ball game was played recently on the battleground, south of Rice. The Blue Diamonds took their revenge on the Jahn & Bressi nine to the tune of 9 to 11. A previous game had been won by the J. & B. team by a score of 18 to 15. Two more games are scheduled between the two clubs.



Here they are, folks! The three musketeers of Jahn & Bressi. Reading from left to right, this collection of manly beauty may be identified as follows: Vincent Bressi, president of the firm; N. F. Jahn, vice-president of the Associated General Contractors, and Joseph Muscolo, general superintendent of Jahn & Bressi.

The many aqueduct people who knew him will be interested in the fact that Robert M. Baughey, formerly of the M. W. D. staff, is now editor of the California Conservationist magazine with offices in Sacramento. After leaving the District Bob was on the editorial staff of the Los Angeles Examiner.

\* \* \*

A sixteen-man team representing the L. A. office of the Metropolitan Water District entered the Los Angeles Playgrounds Industrial Tennis Tournament, which started March 7, it is announced by President Merrill Johnson of the L. A. office Tennis Club. The District is being represented by the following: M. Anderson, C. J. Brandt, H. Crawshaw, K. Davis, R. Dennis, B. Gumensky, E. Hodges, M. Johnson, D. MacConaghy, J. Marshall, L. R. Osgood, Jack Cheatham, C. Schraeder, R. A. Skinner, J. Williams, and W. Winzell. By entering sixteen men the club is allowed to play the first four brackets among its own players and winner of these brackets is to receive a silver trophy for his efforts.

\* \* \*

Griffith Company crews started stripping operations on the Cajalco dam foundation on February 26, marking the launching of a new phase of the dam project. On February 27 the clearing of brush from the dam foundation was started.

\* \* \*

A long and distinguished career as a designing engineer was brought to a close last week when Frederick Gfeller of the Electrical-Mechanical division retired from the active practice of his profession. Mr. Gfeller started in his chosen field 37 years ago in Switzerland, but came to America many years ago, having been a designer for Dreyfuss & Son, the Doble Water Wheel Company, the Pelton Water Wheel Company, and the Southern California Edison Company before joining the District staff. During his long experience he designed a large number of impulse wheels, valve, and other hydraulic devices, as well as hydraulic portions of a number of large hydraulic plants. Few, if any, men on the Pacific Coast have had as extensive experience in the design of hydraulic machinery.



## Boulder Dam Is Taken Over By U. S.

On February 29 the United States Government took formal possession of Boulder Dam, sister project to the Metropolitan Water District Aqueduct from the Colorado River—a dam which, through the water it will conserve and the power it will generate, will affect directly the lives of people living in an area twice the size of the New England states.

There was no public ceremony in the act of turning over the dam to the Government. In front of the construction offices of Six Companies, Inc., General Superintendent Frank Crowe handed over keys to the plant.

Ralph Lowry, representing the U. S. Reclamation Bureau, accepted the gigantic structure on behalf of the Government. Only a handful of workmen witnessed the brief, historic exchange.

"We compliment the Bureau of Reclamation on the engineering accomplishments in designing and directing construction of this grand structure," Crowe said.

The two shook hands and Lowry said:

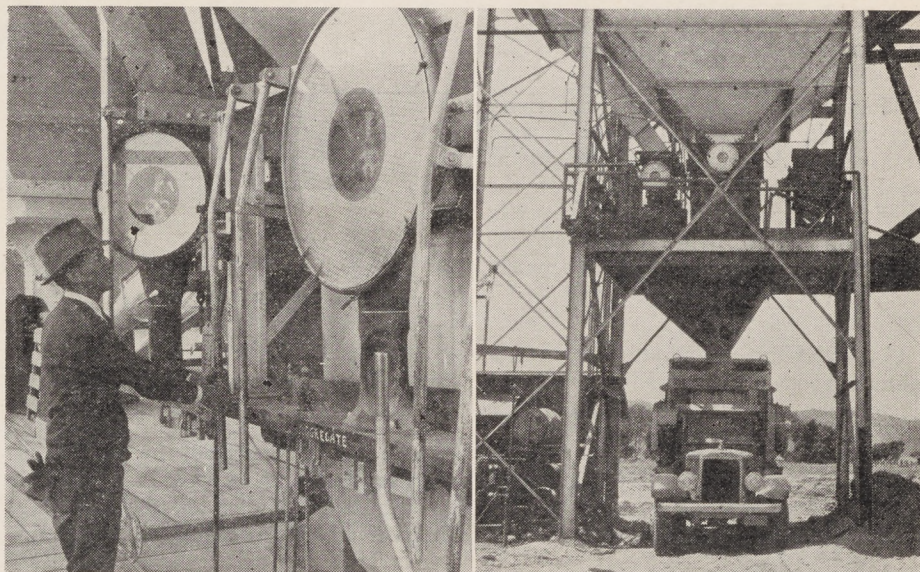
"On behalf of the Department of the Interior, I am pleased to accept this great work and to congratulate your company upon the rapid progress made and the excellent quality of the work done here."

March 1 was originally set for the transfer of the giant project, but Crowe and Lowry decided to make a private ceremony out of it the previous day, when work under the Six Companies' contract actually was completed.

Six Companies, Inc., wound up work with completion of the construction of the huge power house on the downstream side of the dam. Installation of the generators and other electric equipment in the power house is being carried forward by the Federal Government.

The dam was virtually finished a year ago, when the four diversion tunnels, which carried the river around the dam site, were closed. Since February 1, 1935, the giant concrete wedge that is Boulder Dam has been backing up the Colorado River and starting the formation of the huge reservoir.

Extending 90 miles upstream, the lake is already the world's largest artificial body of water, renamed Mead Lake in honor of the late Elwood Mead, chief of the U. S. Reclamation Bureau who died recently.



With more ease than a butcher weighs out lamb chops and pork sausage, millions of pounds of cement and aggregates are weighed out each day along the aqueduct line. At left is a close-up view of how it's done on Winston Brothers' East Iron Mountain tunnel job. At right is a scene at J. F. Shea Company's batching plant at Casa Loma siphon.

## ACCURATE SCALES USED TO WEIGH CONCRETE MATERIALS

Combining precision and accuracy with ponderous size, huge electric weighing machines are removing the guess work from concrete mixing along the line of the Colorado River Aqueduct, it was revealed in engineering reports on file in the office of General Manager Weymouth of the District.

Designed to insure absolute uniformity of the quantities of ingredients in the concrete used in building the 390-mile aqueduct system, the big weighing machines handle millions of pounds of materials with more ease and speed than a butcher's scale weighs lamb chops and pork sausage.

In addition to the manually operated installations, many are equipped with photo-electric cells or mercury contacts, operating automatically and requiring an operator only to push a button for each of the five weighing operations involved in a given batch of concrete ingredients.

The materials weighed out are cement, sand, pea gravel, two-inch stone, and one-inch stone. Extensive studies by Water District testing engineers have determined the exact proportions of each material for the maximum strength of concrete.

Vast quantities of the materials are handled. District records reveal that the machine at Wide Canyon Camp, for instance, is capable of weighing out 2,200,000 pounds of cement and aggre-

gates in twenty-four hours. This involves 3,000 operations and is done with accuracy within one per cent of perfect.

Each cubic yard of concrete used for aqueduct conduits, canals, siphons, and tunnel lining weighs approximately 4,200 pounds, including rock, sand, gravel, water and cement.

## Pump Motor Bids To Be Taken April 16

Sealed proposals for furnishing synchronous motors for the pumping plants of the Colorado River Aqueduct will be received by the Metropolitan Water District at 10 A. M., April 16, it was announced last week.

The District's advertisement for bids reveals that fifteen motors will be required to drive the pumps which already have been ordered for the Intake, Gene, Iron Mountain, Eagle Mountain, and Hayfield pumping plants, or three for each plant.

According to the specifications, all of the motors will operate at 6,900 volts and 60 cycles.

The six motors to be purchased for the Intake and Gene plants under Item 1 will be 9,000 horsepower each; the three for Iron Mountain under Item 2 will be 4,300 horsepower, and the six for Eagle Mountain and Hayfield under Item 3 will be 12,500 horsepower each.